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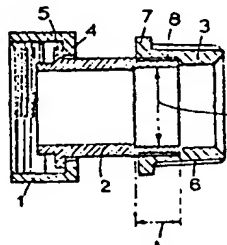
1 460 864

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 (72) Inventors JACK BEACHAM and BRIAN BERNARD DEELEY

GREAT BRITAIN (19)
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CLASS. 28.5
RECORDED

(54) IMPROVEMENTS IN PIPE UNIONS

- (71) SPEY Q67 *A1007Y/01 *GB 1460-864
 PANY LTD Mfg. pipe union for incompatible threaded members - by threading
 Delta Road tubular member, fitting union nut, screwing end member on and
 hereby dec deforming threaded joint
 pray that a SPERRYN & CO LTD 14.03.74-GB-011308
 the method (06.01.77) F16L-19
 be particu A pipe union for two incompatible threaded members is
 following s formed from a stamped union nut (1) held captive on a sta-
 This inve mped and machined tubular member
 10 providing (2) secured to a forged member (3).
 first and set The nut is tapped and the member (3)
 which the has an external tapered thread (6).
 more partic The union is formed by first forming
 comprising a thread on one end of the tubular
 15 flange and member (2) and then passing the nut
 member hi over this end. The member (3) is
 adjacent to then screwed onto the tubular mem-
 being adap ber and a ball plunger or roller bur-
 with the fir nishing tool inserted to expand the
 20 of the tub joint to bind the threads of the joint together to form a gas
 member by tight seal. 13.6.75 (4pp)
 co-operation between the
 flanges of the nut and the tubular
 member on tightening of the union
 25 nut onto the first member, and a
 further metallic member secured to the
 other end of the tubular member and
 adapted to screw-threadedly engage
 with the second screw-threaded member,
 30 the union nut being held captive on the tubular
 member by the flange on the tubular
 member and said further member which has
 a sufficiently large transverse dimension to
 prevent passage of the union nut over said
 further member.
 35 Unions of this kind have been used for
 connecting gas appliances together, for
 connecting a meter service governor to a
 meter for example.
 40 It is known to connect the tubular member
 to said further member after assembly of the
 union nut onto the tubular member by
 screwing and brazing the tubular member to
 said further member.
 45 This is, however, an expensive operation,
 requires testing of the seal between the two
 members, and has a high reject rate.
 Moreover the seal between the two
 members may be broken when the union is



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The union comprises a stamped union nut 1 held captive on a stamped and machined tubular member 2 secured to a further member 3 which is a forging.

- 5 The union nut 1 is internally screw-threaded for engagement with external screw threads on a first member, not shown, and is provided with an internal radial flange 4 for engagement with an external radial flange 5 which is an integral part of one end of the tubular member 2. When the union nut 1 is screwed in use onto the first member the tubular member 2 is drawn towards the first member by the engagement between the flanges 4 and 5.

- 15 The further member 3 is formed with an external tapered screw thread 6 for engagement with an internal co-operating screw thread of a second member, not shown, and is provided with an integral polygonal radial flange 7 for engagement by a spanner during tightening in use of the further member 7 to the second member.

- 25 Initially the other end 8 of the tubular member 3 comprises a plain sleeve. Prior to assembly of the union nut 1 onto the sleeve the exterior of said other end 8 is formed with a plain external screw thread for engagement with a complementary screw thread formed internally of the further member 3. The union nut is then assembled onto the tubular member 2 by passing it over said other end 8 of the tubular member. The tubular member and the further member are then screwed together and a ball plunger or roller burnishing tool is inserted into the joint between the members by passing it through the further member 3, and the joint between the members is expanded radially over the distance A by cold forming to increase the internal diameter D of the joint and to bind the screw threads of the joint together to form a gas-tight seal between the tubular member 2 and the further member 3.

- 45 In one example the initial diameter D is 0.875 inches and a plunging tool of 0.925" diameter is used. The diameter D is thus increased by slightly more than 4% of its initial value.

- 50 In order to increase the break-loose torque of the joint between the members 2 and 3 a drop of a screw-thread locking material such as that sold under the Registered Trade Mark 'LOCTITE' STÜDLOCK (OR GRADE 75) is applied to the middle part of one of the screw threads before the members 2 and 3 are screwed together.

WHAT WE CLAIM IS:—

1. A method of manufacturing a pipe union of the kind set forth comprising forming said other end of the tubular member and said further member with complementary screw threads, assembling the union nut onto the tubular member by passing it over said other end of the tubular members, screwing said tubular member to said further member, and then permanently deforming the screw-threaded joint between said tubular member and said further member by expanding the joint radially.

2. The method according to claim 1 in which the tubular member is formed with its screw thread prior to assembling the union nut onto the tubular member.

3. The method according to claim 1 or claim 2 in which prior to screwing the tubular member to said further member screw-thread locking material is applied to at least one of the co-operating screw threads.

4. The method according to any of the preceding claims in which the co-operating screw threads comprise an external screw thread formed on the tubular member and an internal screw thread formed on said further member.

5. The method according to any of the preceding claims in which the expansion of the joint is performed by cold forming.

6. The method according to claim 5 in which the joint between the tubular member is expanded by insertion of a ball plunger.

7. The method according to claim 5 in which the joint between the tubular member is expanded by a roller burnishing tool.

8. The method according to any of the preceding claims in which the tubular member and said further member are of brass.

9. The method according to any of the preceding claims in which the internal diameter of the joint between the tubular member and said further member is increased by more than four per cent of the initial diameter.

10. The method according to claim 1 and substantially as described with reference to the accompanying drawing.

11. A pipe union of the kind set forth produced by the method according to any of the preceding claims.

12. A pipe union of the kind set forth manufactured according to the method of claim 10 and substantially as described with reference to the accompanying drawing.

The union comprises a stamped union nut 1 held captive on a stamped and machined tubular member 2 secured to a further member 3 which is a forging.

5 The union nut 1 is internally screw-threaded for engagement with external screw threads on a first member, not shown, and is provided with an internal radial flange 4 for engagement with an external radial
10 flange 5 which is an integral part of one end of the tubular member 2. When the union nut 1 is screwed in use onto the first member the tubular member 2 is drawn towards the first member by the engagement between the flanges 4 and 5.

15 The further member 3 is formed with an external tapered screw thread 6 for engagement with an internal co-operating screw thread of a second member, not shown, and is provided with an integral
20 polygonal radial flange 7 for engagement by a spanner during tightening in use of the further member 7 to the second member.

25 Initially the other end 8 of the tubular member 3 comprises a plain sleeve. Prior to assembly of the union nut 1 onto the sleeve the exterior of said other end 8 is formed with a plain external screw thread for engagement with a complementary screw
30 thread formed internally of the further member 3. The union nut is then assembled onto the tubular member 2 by passing it over said other end 8 of the tubular member. The tubular member and the further member are then screwed together and a ball plunger or
35 roller burnishing tool is inserted into the joint between the members by passing it through the further member 3, and the joint between the members is expanded radially over the distance A by cold forming to
40 increase the internal diameter D of the joint and to bind the screw threads of the joint together to form a gas-tight seal between the tubular member 2 and the further member
45 3.

50 In one example the initial diameter D is 0.875 inches and a plunging tool of 0.925 inch diameter is used. The diameter D is thus increased by slightly more than 4% of its initial value.

55 In order to increase the break-loose torque of the joint between the members 2 and 3 a drop of a screw-thread locking material such as that sold under the Registered Trade Mark 'LOCTITE' STÜDLOCK (OR GRADE 75) is applied to the middle part of one of the screw threads before the members 2 and 3 are screwed together.

WHAT WE CLAIM IS:—

60 1. A method of manufacturing a pipe union of the kind set forth comprising forming said other end of the tubular member and said further member with complementary screw threads, assembling
65 the union nut onto the tubular member by passing it over said other end of the tubular members, screwing said tubular member to said further member, and then permanently deforming
70 the screw-threaded joint between said tubular member and said further member by expanding the joint radially.

2. The method according to claim 1 in which the tubular member is formed with its screw thread prior to assembling the union
75 nut onto the tubular member.

3. The method according to claim 1 or claim 2 in which prior to screwing the tubular member to said further member screw-thread locking material is applied to at least
80 one of the co-operating screw threads.

4. The method according to any of the preceding claims in which the co-operating screw threads comprise an external screw
85 thread formed on the tubular member and an internal screw thread formed on said further member.

5. The method according to any of the preceding claims in which the expansion of the joint is performed by cold forming.

6. The method according to claim 5 in which the joint between the tubular member is expanded by insertion of a ball plunger.

7. The method according to claim 5 in which the joint between the tubular member is expanded by a roller burnishing tool.

8. The method according to any of the preceding claims in which the tubular member and said further member are of
100 brass.

9. The method according to any of the preceding claims in which the internal diameter of the joint between the tubular member and said further member is increased by more than four per cent of the initial diameter.

10. The method according to claim 1 and substantially as described with reference to the accompanying drawing.

11. A pipe union of the kind set forth produced by the method according to any of the preceding claims.

12. A pipe union of the kind set forth manufactured according to the method of
115 claim 10 and substantially as described with reference to the accompanying drawing.

BARKER, BRETTELL & DUNCAN
Chartered Patent Agents
Agents for the Applicants
138 Hagley Road
Edgbaston
Birmingham B16 9PW.

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